



DOE/NRC Quarterly Management Meeting







Project Update

Presented to:

DOE/NRC Quarterly Management Meeting

Presented by:

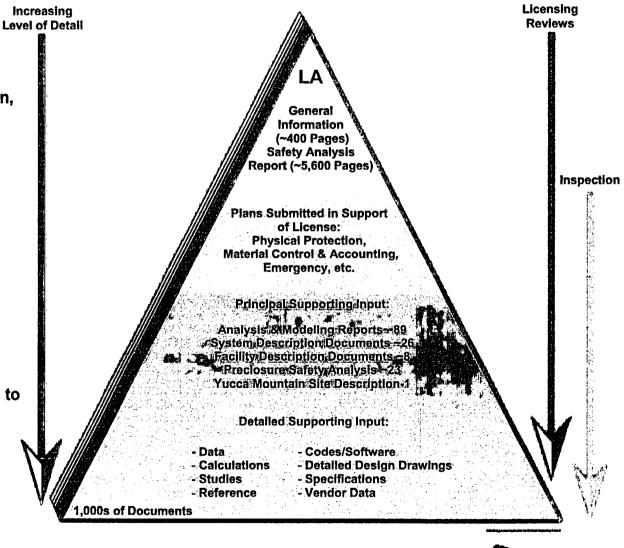
ニW. John-Arthur, III ______

Deputy Director, Office of Repository Developmen U.S. Department of Energy

February 17,42005 Las Vegas, Nevada

License Application Content and Supporting Documents

- General Information (GI)
 Approximately 400 pages
 - General Description
 - Proposed Schedules for Construction, Receipt and Emplacement of Waste
 - Physical Protection Plan
 - Material Control and Accounting Program
 - Site Characterization
- Safety Analysis Report (SAR) Approximately 4,800 pages
 - Repository Safety Before Permanent Closure
 - Repository Safety After Permanent Closure
 - Research and Development Program to Resolve Safety Questions
 - Performance Confirmation Program
 - Administrative and Programmatic Requirements







Key Technical Issue Agreements Status Summary Reflects activity through February 8, 2005

KTI ID	Agreements Reached	Agreements Submitted to NRC	Responses Submitted In NRC Review	Partial Responses Submitted	NRC Needs Additional Information	Responses Remaining to be Submitted	Agreements Complete
CLST	58	58	14	0	0	0	44
ENFE	41	41	13	0	1	0	27
GEN	1	1	1	0	0	0	0
IA	22	22	4	0	4	0	14
PRE	9	9	2	0	2	0	5
RDTME	23	23	5	0	0	0	18
RT	29	29	14	0	0	0	15
SDS	10	10	5	0	0	0	5
TEF	15	15	7	0	0	0	8
TSPAI	58	58	23	0	6	0	29
USFIC	27	27	5	0	0	0	22
Total =	293	293	93	0	13	0	187

NRC acknowledges that it is up to DOE to determine how, or whether, to respond to NRC staff feedback in DOE's response to the agreements.

CLST: Container Life and Source Term

RT: Radionuclide Transport

ENFE: Evolution of the Near Field Environment

SDS: Structural Deformation and Seismicity

GEN: General

IA: Igneous Activity

TEF: Thermal Effects on Flow

PRE: Pre-Closure Safety

TSPAI: Total System Performance Assessment and Integration

RDTME: Repository Design and Thermal-Mechnical

USFIC: Unsaturated and Saturated Flow under Isothermal Conditions





Yucca Mountain Project – Performance Indicators August 2003

1	Primary						
	ARE LESS		TRUETON TOWNS TOWN TOWNS TOWNS TOWNS TOWNS	STY ANDERSONS AN	1807 Committeets College Ca BRCLS Committee	Total Section 1	
Work Execution	Elizar (2004) 2008 y 2004	25.4 24.75	Publisher Elik	Englishments at the second sec	ELEGICATION OF THE STATE OF THE		
	· · · · · · · · · · · · · · · · · · ·	Hidu The e s En e s	Participant Control No. (""F" (N. Bobs (No") (C. Aldinos)				
×	#15.77#	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Color of School	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1			
	Con- Con- Conditions 2000 theories (Man) a history	201 = 300 201 = 300	See Commission COME - Septimen Simila - States	Final Fig. Administration (Thirteen house spin (Brain or House)	(generations) (known) / wagscape that with missions	Processor foresta processor processor processor processor processor	
	7.1 Piteri	Project Cordon (BCE) / Trepulse (BCE) / Trepulse (BCE) / Trepulse	STEED STORE BEDIEVE CONTROL	Market Charles (DOD) a market (BSC) D Torress	POST-S reposter Pag (BS) C Unspectable	Company Colls & Vende Secul & Core	
	Property Justical Color Cymr (SCC) W Menger	Substitution of the substi	Transis Transis DIGCS Woods 650 M Micros	According to the control of the cont	s∓⊷ii.		
	refer 6 teach PISES bearings (PISE) a teach	Zuman dang Samu Miningama t mangkan aga mangkan gala mangkan gala	Compellione Period - Streets (DOC) 5 Water (PSC) 4 Dees	a deb. C feath Autophrees (DOS) A house (SO) A Lieus	Sales and reads Fragues Patricensor a Critical Sales In Sec. (3 Capes		
달	E H E H E H	Received Product Componito Idinto 1/4 Security RESIGNATION	AND EMPLOYMENTS				
Management	File common commence co	THE PERSON		The confidence of the confiden	To will display a control of the con	Street end of a passed pasted of the order and order EDITO ORDER	
M	File File For File For File File File Bridge File File For For	To Transport	en la grade Paris Paris Paris La responsación La responsación	Table 1	For the second		
	Softwarenspecies Management (white is Management (white is Management (it Softwarenspecies)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 () (() () () () () () () () () () () ()	Educations Completed	Emiliarina de Paragonin Paragoniario Liver de Prado (Bisco) Comes		
	Annuari Management DISO / Tropues DISO S maner	THATTERY AND TO SUSTINITY EST OF THAT EST OF THAT	Signature (Signature (4 74 F 1 144 52 F 156 E.	27.4 First 6 Continuency DOC(4 Trebuses (BSC) 5 wagner	Fig. 19 (19) Fig. 19 (19) Consultation From Extension Tradement (25 Co. 5) Paument	From the formal seasons of the seaso
	27 Industrial Industrial Industrial Industrial Industrial	Part on Land of Land of the Barriot of the selection	Types of the second of the sec	(ACE) 本 Bondon (ECE) 本 Bondon (ECE) 本 Bondon			
	Tie Abia		Frankry Frankry (EAS): Trether (EAS): S. Hagner		•		
	CCC SC+. *-	Cold Product Cold Product Cold Products Cold Products	Enternance Transporter Transporter Transporter	212 Dr. Britand Tromp 1 - American in Milks Element (A. Ros.	End Rivers Communication Communication	Esta Cotto Propers Espara Cotto y a creciona	
	Tink of Jane 19 19 19 19 19 19 19 19 19 19 19 19 19	Selection of the select	Accustocate a Beganistical Social Area Social Medical	513 Emelog Indiana Alvano Single Williams 52 Millerge III	r we'r feetgaet Taa ferfae feg Afrik Gestae Bir sta ma	EST BRUMAS & COURMON & COURMON & COURMON & COURMON & COURMON	100年年 12日 - 第1919年 - 12日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日





	Yucca Mountain Project Annunciator Panel								
	Performance Indicators based on January 2004 Data								
	Primary Secondary Focus Areas								
W	1.1	1.1.1 License	1.1.2 HRC	1.1.3 License	1.1.4 NRC	1.1.5 Key	FA1.1		
0	Licensing	Application Development	Interactions	Support Network Input	Commitments	Technical Isaucs	Sefeguerde		
	Y [1]	G T	le	R		v	c —		
r	ALALAI -	BENEFIT	ALAIGIG -	GEGG	BBVG -				
k	1.2 Engineering/	1.2.1 Surface	1.2.2 Subsurfece	1.2.3 Engineered	1.2.4 Regte & Integration	ł i	}		
	Design	Fecilities	Fecifities	Berriere	Menegement				
E	S TITE	Y III		G EI		VIVIN			
X	1111111	1.3.1	1.3.2		1.3.4	1.3.5 AMR			
ê		TSPA	Performence	1.3.3 Open	Precioeure	Production	1		
-	1.3	L	Confirmation	l ———	Sefety Analysis B > G				
C	Sefety Analysia	OVAR -	G G G Y	GIGIGIY -					
u	Analysis	1.3.6 Date	1.3.7 Model	1.3.8 Software					
t.		Qualification	Velidation	Qualification					
	Y	R III	v	Y					
•	1.4	YYEE -	COCO T	<u> </u>	TTOY -	6666			
0	Site	1.4.1 Site Engineering	1.4.2 Site Construction	1.4.3 Site Meintenance	1.4.4 Operations	1.4.6 Bechtel Heyada			
n	Operations	CLADAMAGEL HAD	l		, -				
—	G Primary		le	Secondary		<u>[G</u>	Focus Areas		
							10000		
	2.1								
	Project Support		Ì	i	1	ŀ			
	G TT								
	2.2 Sefety,	AAAC	2.2.2 ES&H			 ————————————————————————————————————	┝┸┸┸		
	Health, and the	2.2.1	Progrem	2.2.3 ES&H Reporting					
	Environment	G TI	Awereness	B>G	l				
M	ROOT	JUNE 1	VIGITIY -		RIDIDIY -	 			
а	2.3	2.3.1 Technical	2.3.2		2.3.4 Quality				
n	Quality Assurance	Product Compliance	Verification of Quality	2.3.3 Open	Procedure Process Health				
	ly []]	R I	V		ñ>G □□□				
а	Z.4 Corrective	<u> </u>	2.4.2 Seff	ZA3 Cecresi	ABAA -	245 CAP			
g	Action Marnt	2.4.1 Provention	Reporting	Analysis & CAP	2.4.4 Timely 8 Effective CAR	Performence &			
e	System		Culture	Development	a CAR	Infrastructure			
m			R VIVIVIDI I		 		├────		
e	2.5	2.5.1	2.5.2	2.6.3					
'n	Menegement Fremework	Procedures	Requirements Menegement	Menagement Programa		ĺ			
	G III I	B>G LI		Y					
t	O Y Y Y	ALALA -	ALAA	Yaca -	GOYY ~	2.7.5 Key	├ ┸┸┸┸		
	2.7 Project	2.7.1 Cost Performance	2.7.2 Schedule Performence	2.7.3	2.7.4 Risk &	Deliverable	i		
	Management	(Overell CPI)	(Overall SPI)	Scope Beseline	Contingency	Critical Path	[
	Y LTT	Y	v [1]	B > G	Y ELT	Float Y			
	2.8	2.8.1				<u> </u>			
	Organizational	Employee	2.8.2	2.8.3	2.8.4 Open	internal			
	Climate	Concerne	Sefety Culture	SCWE		Communicatio			
	Primary	G	IA T	Secondary		<u> </u>	F \$55.5-		
	OOYO		UUUUU T			O O Y O -	Focus Areas		
	3.1	3.1.1 Open	3.1.2 Externel Communicatio	2420	3.1.4 Open	3.1.5			
	Externel	3.1.1 Open	U-	3.1.3 Open	3.1.4 Open	Funding			
	G [∏t		ly			B>G			
	Key								
	History								
	trand Exceptional performance that accorder requirements and accorder requirements and accorder requirements and accorder requirements. Performance which warrants								
	Metric Title expectations for the desired The status code "B > Q" indicates that the increased management attention and second would be Divi. but has not a reservance to exhibit desired results or								
		then six mont	he.	demonstrated systai		to reverse a nega -Acceptable perf	ormance that ralles		
	Late Indicators	Pagraded or performance	werreading	Gray for Late - Upde provided by due dot	fod metric not e.		ions which could performance into the		
	organicant avea of autograment D Approved metric not yet reporting date.								
have received and have yet approved									





Yucca Mountain Project Annunciator Panel

Performence Indicatore based on data for: April 2004 Primary Secondary Focus Areas TITITI 1.1.5 Key W 1.1.4 NRC 1.1.2 NRC 1.1 Application Technical Sefeguerde O Natwork Inc. Soloio III 1.2.4 Regte & 70 Y 0 1,2.3 1.2.1 k Integration Integration Team (RIT) Design Facilities **Facilities** Derriera E × 1.3.1 e Confirmation Sefety Analys 1.3 Sefety C IN TO u 1.3.4 Date 1.3.7 Mode Software Qualification SYOR SYON BOOT 7000 0000 0 1.4.1 Ske 1.42 SKe 1.4.3 Site 1.44 1.45 8k= Critical Engineering n Operation System Primary Secondary Focus Areas e c e e 2.4 et Sug 2.2 Sefety. 2.2.2 ESSH 2.2.1 Incidents 2.2.3 ES&H reith, and the Program Reporting M 2.3.4 Correction 2.3.4 Province 2.3.2 Proc 2.3.3 Vendor 2.3.5 October etion Program - Ormality Quality Quelity n RHY a BBY াল লা প BBB 2.4.3 Timely 2.4.1 2.4.2 Self 2.4.4 Timely C/ g CAP Action Manua Anelysis & Plen Development Reporting Culture System Effectives 2.6.3 m 2.6.1 Menegemen Programs n [V]VIG Y Y Y Y 7 6 8 2.7 2.7.1 Cost 2.7.2 Schodul 2.7.4 2.7.3 Deliverable Project Performance Rick & (Overell CPI) (Overell SPI) Contingene 2.8.1 7|7|0|0| 2.6 TYTYIG 2.8.2 2.8.3 Internal Safety Culture SCWE Climete Communicati Primary Secondary 7 0 0 3,1.2 3.1.5 3.1 Externe Funding 41.4 4.1.3 Becklog Performence Learning Performence Prevention Key Yallow is read to debote:

"Purierments which wrenade increased mesbigament wittension and
resources to exclusive desired results or to reverse a negative bread

"Acceptable purierments that relies are not at resultines which
enade change pade mesh perfections are not at the second change of the force of the second change and most perfect of the second change pade mesh of the second change are not one of the second change are Good performance which meets or aregade requirements and expectations. The protest seeds "B > G" indicates that the sense would be Blue, but has not delinearized paymined performance. Exceptional performance that exceeds all requirements and expectations for the desired ortame, multitained for store # 1746 (A) 0 Y Matrix Title Gray for Late - Updated metric not provided by due data. d Indicates a change to matrix this manife ∇ Approved matrix and yet reporting date. BIGIVIA

A lettered history the with a white background indicates the point at which a change accoursed in the under the pent of change head to the pent of change head to the intent of the me calculation, or the debtoin-indication of a sub-metric.

Trend indicators we based on a realing overage of six months of date, if there are not six date points but date writing or is indicated on a neutral. BIGIVIA





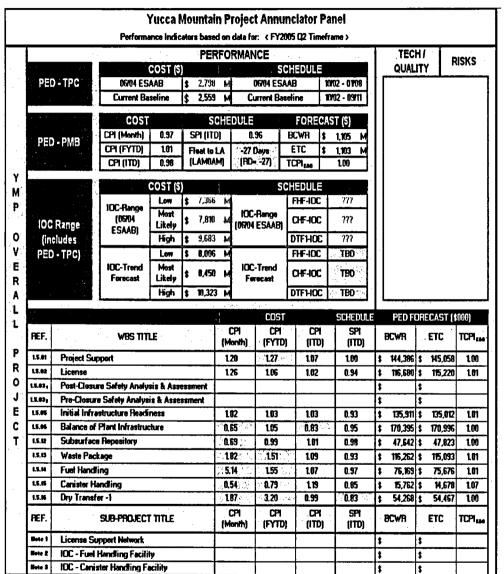
Yucca Mountain Project Annunciator Panel

VICICITY VIC	ocus Areas	Focus Area	Focus Ares	US Ares	Ares	-		Т	_	1
1,1 1,1		ololele -	0000	ावा न	J -	=	-	1		ı
Lisonaling Applications Interactions Security	FA1				_		ļ	I		1
Secondary Seco	Sefeguerds						ı	ı		1
Comparison Com	>c [[]]	8 × G	B>G FT			_	4	ł		ı
Tengineering/ Develop	V06 -	VVae	VVae			÷	-	1		ı
Engineering/ Surfree Subsurfree Peolitics Engineered Marriary Mining Marriary No. 1.2.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	A2 Reguletory	FA2 Requietor	FA2 Requieto	teguletor	uleto		y	ı		۱
Total V Value 1 Value	Integration							ı		۱
TIPE A CONTRIBUTION OF THE PROPERTY OF THE PRO	Teem (RIT)	Teem (RIT)	Teem (RIT)	<u>س (هل)</u>	(ML)	<u> </u>	لـــا	1		ı
## 1.3.4 1.3.4 1.3.2 1.3.4 1.3.5 1.3.4 1.3.5 1.3.4 1.3.5 1.3	———	12	14	تســ	تئب		4	1		į
TSPA Performance Production Secondary Secondar]	1	1				- 1	ı		1
C Sefety Annelysis Canferrenters Sefety Annelysis Canferrenters Canfer	Į	1	1				ļ	ı		۱
C Service Color Co	i	1	1				1	١		ı
Analysis Date Date		1	1					ı		ı
Dust Walkhelton Walkhelton Qualification Qualificati								ı		ı
Valory Control Contr			1					ı		Į
Tagin Tagi		1	1					ı		1
The state of the s		1	1					ı		1
Primary Secondary Second		1	1				3	1		ŧ
Departitions Operations O		1	1				-	1		ŧ
Primary Secondary		1	1				,	ţ		ł
Project Support		I	1				,	1		1
2.2 Sensity,		I	l					ı		1
Project Support G		1	1					ı		۱
C C C C C C C C C C		1	I				,	١		ı
2.2 Sefety 2.2.1 Program Pro		1	1					ı		۱
2.2 Sefety, Health, and the Erwir consense Program Awarenese Reporting Reporti		1	1				,	1		ı
Headith, and the Program Repuriting	l	i	i				1	1		ı
Reserving Reporting Repo			1					ı		1
S			1					ľ		ı
VIVIV VIRIN Calada Calada VIVIV VIDIA Calada Calada VIVIV VIDIA Calada		j	1				į	1		1
2.3.4 Percenter Quality Assurance Quality Assurance Quality Assurance Quality		1	.1				- 1	1		١
Accordance of the proper of th		1	1					ı		ı
VY V		1	1				,	ļ		ı
2.4.1 Server		1	i					I		۱
Action Mgmr System Procedures Culture Culture Development Procedures Procedur		1	1					ı		۱
System System Effectiveness Culture Development V Y Y Q 2.5 2.6 Percedures Requirement Requiremen			.1				,	ı		ļ
2.5.3 Learnors Proposedures Menegement Fremework G	}	1	1					1		1
Y Y Q Q Q Q Q Q Q Q	j		1					ı		į
2.6 Requirements		1	1					ı		ı
Management Procedures Management Described Program Pro		1	1					ı		ı
Program Program Progr	J		1					Į		ı
2.7.1 Cost Project Menagement Project Menagement Project Menagement V V V V V V V V V V V V V V V V V V V	ļ	1	1					1		ı
Performance (Owerell CPI) Resided Performance (Owerell CPI) V V V V R R G Confingency Ploat V V R R G CONFINGENCY V V R R G CONFINGENCY V V R R G G G G G G G G G G G G G G G G		1	1					1		١
Project Management (Overal CPI) Wanagement (Overal CPI) V V V R G Contingency Recognitions Co		J	J					1		١
Management Coveral SPI Contingency Place Pla		l	I					ſ		1
Primary Prim		1	l					ı	٠	۱
Depreted or stores Depreted or stores		1	1					ı		۱
Cilenate Converse Galaga Gala		1	1					ĺ		ı
Climate Concerns G G G G G G G G G G G G G G G G G G G		1	1					1		1
G Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q			1					ı		ı
3.1.5 Externel Correr, G	,	1	1					ı		ı
3.1.2 Externel Comm. G			1					ı		ı
Externel Crown. G		1	1				,	١		ı
Correction Cor		1	1					ŀ		ı
Harmen Performence Prevention Performence Awerence Awerence V Lili V Lili V Lili V Lili V Lili V Primary Primary P tread		1	1					1		۱
Harmen Performence Prevention Performence Awerence Awerence V Lili V Lili V Lili V Lili V Lili V Primary Primary P tread		1	1					ı		ı
Performance V		1	1					ŀ		ı
Performance Continue Performance Perf		1	I					١		ļ
Permany Secondary Key		1	I					ĺ		١
Horery							_			į
Morery Prend E Exceptional performance that accorded VI requirements that accorded VI requirements and arpectations. The sature code of Dec., but the not management stitutions and except when performance which warrant translates are score would be Dies, but the not management stitutions are cover would be Dies, but the not management stitutions are cover would be Dies, but the not management stitutions are cover would be Dies, but the not management stitutions are cover would be Dies, but the not management stitutions are covered and the Dies, but the not management stitutions are covered on the not successful by the state. E							_	-	_	•
Matric This Matric This Accessed registerates and appetitions for this desired extraorm, ministrated for more than it is many than it is many to the part of more than it is many to the part of more than it is many to the part of more than it is many to make the part of more than it is many to the part of more than it is marked and the part of more than it is marked and the part of more than it is marked and matric hap performence were making to metric that more than one to the second and the part of more than the part of the part										
Matric This Matric This Accessed registerates and appetitions for this desired extraorm, ministrated for more than it is many than it is many to the part of more than it is many to the part of more than it is many to the part of more than it is many to make the part of more than it is many to the part of more than it is marked and the part of more than it is marked and the part of more than it is marked and matric hap performence were making to metric that more than one to the second and the part of more than the part of the part	4:	aneta:	lanota:							
eviceme, maintained for more contents of the properties of the pro	ranta instanced	marrante incresses	· marranta instances	maranad	nord.					
than air meach. Lite Indicators a change in a constituted marking and a conditional with a constituted participation and conditional within any performance were many performance were were many performance were many performance were were were many performance were were were were were were were we	ed revewees to se to reverse a	on and revewees to one or to reverse a	on and resources to alts or to severes a	DWG45 to	45 to 54 b					
to metric this month. significant level of management T Approved metric not yet reporting data.	these six measures. As a demonstrated exercised performance asserting trend.									
to metric this month. significant level of management T Approved metric not yet reporting data.	-Acceptable performance that rolling on a									
	to metric this month. significant level of Management (I) Approved metric not yet reporting data.									
BOY A lettered bletery tile with a white bortuground indicates the point at which a change occurred in the underlying metrics. The parformance reports	reted in the	reported in the	reported in the	in the						
A lectored hierary tile with a writer burchground indicates the point at which a change occurred in the underlying motives. The party menter reports interest tiles to the left of the point of change should be used with cavities. A change is defined as a change to the latest of the metric definition, therefore lates the left of the point of change should be used with cavities. A change is defined as a change to the latest of the metric definition, therefore lates are a change of the metric definition. I the medical section of the section of the section of the metric definition. I the medical section of the section of the metric definition. I the trend is because on a terminal party of set mention or about a finite set next set of the metric because the means as new or and mean the trend is because down the definition is indicated as next set.										
the trend is breed upon the data or a reimby breithja for dis innoctory or data, it there are not set pipeling because in mourage per man despended and the control. The trend is breed upon the data ovalidate, or is indicated an occurred.										
 A "doubled" owlike to a bar on a Rolf-Up Metric chart indicates a change to the number of input metrics or a change in an underlying metric. 										
		te.	te.							





YMP Draft Annunciator Panel



	Primary			Seco	na əry		 Focus Areas
	Lioensing (15.02)	1.11 Completion of LA Decument (15.02.02)	112 NFIC Commitments (15.82.03)	113 NFC Interactions Effectiveness			
w	1.2 Facilities EPC	12.1 Fuel Handling	1.2.2 Carrister Handling	12.3 Dry Transfer Facility - 1			
O R K	Perfermence 1.3 Presiesure	Facility (100)	Facility (10C)	(IOC)			
E C U	Safety Analysis Decuments	Direct Input to SAR	Supperting Decuments	Revisions Resulting from Change			
T O N	Peet Cleaure Safety Analysis Decuments	133	1162	-)-//			
:	Site Operations	Site Status	Paris				
	License Support Network (1.5.02.04)			ПТ		ПТ	
	2.1 Sefety Perfermence	2.11 industrial Safety	2.12 Emergency Management	zation & Safety	Culture	-1.1.1	Focus Areas
K E Y	2.2 Human	2.2.1 Lassons Laured	2.2.2 Self Assessment	2.2.3 Corrective Action			
ROCES	Perfermance 2.3 Work Management	Effectiveness	Effectiveness	Effectiveness			
SES	Quality 2.4		111				
	SCWE	·					
W Ne Paper Trait Y MDS Keyed Into MAD B MDS Approved R Need Answers Regarding Status B MDS Signed Celors and dota in the YMP Dereil Project status represents current performance. Celors in the Werk Execution and Key Process areas are far status only and DD NDT represent current performance.							



Top Half of Panel

Bottom Half of Panel



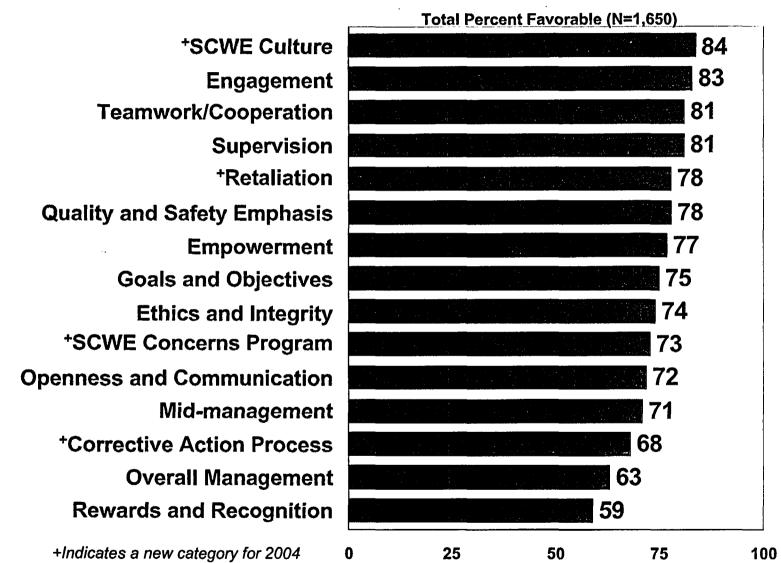
2004 Organization Climate and Safety Conscious Work Environment Survey

- Second annual project-wide survey conducted by independent experts
- Anonymous process; 65% participation
- 15 management and program categories
- Comparison made with U.S. National and U.S.
 Government R&T Norms, and last year's results
- Analysis of results now underway
- Project-wide action plans developed and communicated March-April time frame.





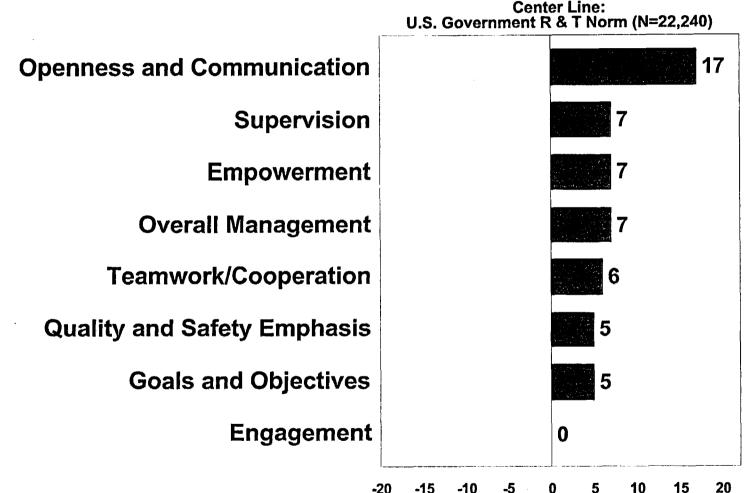
YMP 2004 Overall Category Scores







YMP 2004 Compared with U.S. Government Research and Technology Norm



Normative data not available for all categories.

Colored bars indicate a statistically significant difference.



SCWE Four Pillars Survey Result



MANAGEMENT SUPPORT

77% (78%)

WORKER CONFIDENCE and TRUST EFFECTIVE NORMAL PROBLEM RESOLUTION PROCESSES

> 68⁰/6 (59%)

CAP/DPO

EFFECTIVE
ALTERNATE
PROBLEM
RESOLUTION
PROCESSES

73% (72%)

OCP/ECP

EFFECTIVE
METHODS TO
DETECT AND
PREVENT
RETALIATION

78%

(85%*)

FOCUS / SCWERT

OCTOBER 2004 - YMP SCWE SURVEY RESULTS

* May 2004 Pulse Survey Result

(Change from September 2003 Survey Results)









License Application Status

Presented to:

DOE/NRC Quarterly Management Meeting

Presented by:

Joseph D. Ziegler

Director Office of License Application and Strategy
Office of Repository Development

U.S. Department of Energy

February 178 2005 A

uLas Vegas-Nevada

Topics for Discussion

- License Application (LA) Plans
 - LA Enhancement
 - Post Closure Safety Analysis and Integration
 - Preclosure Safety Analysis/Design and Integration
 - LA Integration with Supporting Documents
- Key Technical Issue (KTI) Agreements Status
- NRC/DOE Interaction Planning 2005
- Accomplishments





License Application Plans

Postclosure Safety Analysis and Integration

- Produced over 3,000 action items
- Identified the 89 documents to be updated (specific evaluation checklists were used to determine which of documents considered should be revised)
- Complete; (4 steps drafting, checking, review, approval) as of November 23, 2004
- Total System Performance Assessment undergoing revision





License Application Plans (Continued)

Preclosure Safety Analysis/Design and Integration

- Focused effort to ensure the preclosure safety basis is well defined, understandable, complete, and reflected in an integrated manner in LA support documentation
- A primary purpose is to ensure consistency between the LA and supporting preclosure documentation
- Basis documents will be issued before submittal of the LA





License Application Plans (Continued)

License Application Integration

- Improving integration of the LA with its supporting technical documents
 - Transparency and traceability continues to improve
- Integrated Issue Resolution Status Report
- Another round of reviews of LA sections was initiated in January
 - Includes checking support documents and references for an adequate basis of assertions
 - Plan additional senior management and senior external reviews





Key Technical Issue Agreement Status (as of February 9, 2005)

- 187 of 293 agreements are considered complete by the NRC
- Continuing dialogue with NRC technical staff and the Center to assist in completing the reviews

	High Risk	Medium Risk	Low Risk
Completed	32	49	106
In NRC Review	1*	38	54
(Addt'l Info Need	s for $High = 8$,	Total = 13)	

Interaction Planning 2005

- In discussions with NRC staff to identify need & timing for upcoming interactions, notably pre-closure topics
- Held Technical Exchange on Quality Assurance Requirements and Description (QARD), Rev 17 on February 10, 2005

*GEN 1.01 is closed for the High Risk portions only.





Accomplishments

- Postclosure Safety Analysis and Integration activities – completed and considered successful
- Substantial progress in Preclosure Safety
 Analysis/Design and Integration in identifying and resolving comments in LA support documentation
- Relocated the NRC OR's offices with enhanced direct access









Quality Assurance Overview

Presented to:

DOE/NRC Quarterly Management Meeting

Presented:by:

R. Dennis: Brown

Director, Office of Quality Assurance

Office of Repository Development

Office of Civilian Radioactive Waste Management

U.S. Department of Energy

February:17;;2005... Las:Vegas: Nevada

Quality Assurance Overview

- Quality Assurance Requirements and Description (QARD)
- Corrective Action Program (CAP) Oversight
- Corrective Action Report (CAR)-001 Status
- Office of Quality Assurance (OQA)
 Audits/Surveillances
- Management and Operating (M&O) Contractor Quality Assurance (QA) Audits/Surveillances
- M&O Quality Management Directive





Quality Assurance Requirements and Description

- Twelve (12) questions from the NRC Additional Information Needs (AIN), dated December 22, 2004
- DOE/NRC Video Teleconference held on February 10, 2005
- AIN responses and QARD Rev 17 will be sent to NRC by late February 2005





Corrective Action Program Oversight

- Both Office of Repository Development (ORD) and M&O QA organizations continue to review 100% of their Level C Condition Reports (CR)
- Seven M&O surveillances of effectiveness of CR actions – No Conditions Adverse to Quality (CAQs)
- OQA's January 2005 audit of the Corrective Action (CA) Program noted several areas of improvement and identified additional opportunities



CAR-001 Status

- Verification Team
- Selection of Analysis Model Reports to Sample
- Summary of Evaluation
- Remaining Steps





Completed Audits

- Compliance Audit of Training of M&O Personnel 1 CAQ
- Performance Based Audit of Pre-Closure Safety Analysis
 4 CAQs
- Performance Based Audit of the M&O Corrective Action Program – 4 CAQs
- Completed Surveillances
 - Exploratory Studies Facility (ESF) Determination of Importance Evaluation Requirements – No CAQs





(Continued)

- Completed Surveillances
 - Preclosure and Design Products 3 CAQs
- Upcoming OQA Audits
 - Compliance Audit M&O Procurement/Las Vegas
 - Compliance Audit of National Laboratory Activities
 - Compliance Audit of Augmented Quality Assurance Program (AQAP) Applicable Activities (OCRWM and M&O) Las Vegas, YMP Site
 - Performance Audit of M&O Records/Las Vegas





(Continued)

- Upcoming EM/OCRWM Audits
 - National Spent Nuclear Fuel Program (Idaho)
 - Savannah River Defense Waste Processing Facility (High-Level Waste)
 - West Valley (High-Level Waste)





(Continued)

- Upcoming OQA Surveillances
 - Test Coordination Office activities support DOE suppliers
 - Weld Closure program at Idaho National Engineering and Environmental Laboratory (INEEL)
 - Use of Data
 - Effectiveness of ORD Level C CR Actions





Management and Operating Contractor Quality Assurance Audits/Surveillances

Completed QA Audits

- Implementing Documents Process (Compliance based and Limited Scope) – 14 CAQs
- Software Use and Configuration Management (Compliance based) 7 CAQs
- Compliance Audit of Site Activities 7 CAQs

Completed QA Surveillances

- Data Confirmation Package 1 CAQ
- Criticality Calculations No CAQs
- Disposition of Discrepancies from PCSA Review Surveillance
 1 CAQ
- Compliance check of calculations that support PCSA 2 CAQs
- Five Design and Engineering Processes No CAQs





Management and Operating Contractor Quality Assurance Audits/Surveillances (Continued)

Upcoming QA Audits

- Repository Design Project (Compliance-based)
- M&O East (Compliance-based)
- M&O West (Compliance-based

Upcoming QA Surveillances

- Screening of CRs
- Four Design and Engineering Processes
- Document Input Reference System Usage
- Use of Unqualified Document Transmittal Notices and Technical Reports





Management and Operating Contractor Quality Assurance Audits/Surveillances (Continued)

Concept

- BSC-QMD defines one QA Program
- BSC-QMD requirements reviewed and accepted by DOE
- Requirements Integration
 - QARD Rev 17 and DOE-Order 414.1B
- Schedule
 - Transmitted to DOE in mid-March
 - BSC-QMD and QARD Rev 17 effective concurrently









Transportation Cask Systems Acquisition

Presented to:

DOE/NRC Quarterly Management Meeting

Presented by:

Gary Lanthrum: Director

Office of National Transportation

Office of Civilian Radioactive Waste Management

U-S: Department of Energy

February 17-2005

Las Vegas: Nevada

Cask System Requirements

- Office of National Transportation (ONT) is focused on using existing cask designs and Certificates of Compliance (CoC) where possible for its transport casks
- ONT has a preference for cask systems that provide the maximum flexibility in terms of facility and fuel compatibility
- ONT has communicated with the Nuclear Regulatory Commission's (NRC) Spent Fuel Project Office (SFPO) that existing hardware will meet many of our needs, but some certificate modifications and new cask designs will be needed





Conclusions Regarding Existing Casks' Ability to Accommodate Commercial SNF

- Vendors in the Cask Capability Assessment (CCA) reports indicated that no single cask could transport more than about 40% of the commercial spent nuclear fuel (SNF) inventory under the conditions of current Certificates of Compliance (CoC's)
- Analysis of the reports has shown that a suite of casks from several vendors could transport upwards of 60% of the projected commercial inventory
- Existing CoC's combined with physical constraints at shipping sites limits current transportation coverage to less than 30% of the commercial SNF inventory
- Both modifications to CoC's for existing casks and new cask designs will be required to transport all of the commercial SNF inventory





DOE SNF and HLW Conclusions

- Casks exist today that are technically capable of transporting DOE waste material
 - Generally, the thermal, structural, and shielding requirements for commercial SNF bound those of the DOE material
- New internal basket designs could be developed to accommodate the DOE canisters
 - Certificate modifications will be required for the new baskets
- DOE fuel will only be shipped in canisters during the first five years





NRC Certification Needs

- Continued integration planning efforts will be undertaken to minimize the number of new casks for NRC review and certification
- In FY06, ONT will have contracts for conceptual designs to address the gaps in current cask capability
 - In FY07, vendor applications to the NRC for CoC modifications and new CoCs
 - Vendors may choose to pursue additional content coverage for their existing designs through CoC modifications before DOE procurements are awarded
- We will keep NRC's SFPO informed of our needs for expanded certificates and new hardware designs









Preclosure and Repository Design Overview

Presented to:

DOE/NRC Quarterly Management Meeting

Presented by

Richard Craun

Office of Repository Development

US: Department of Energy

Eebruary 17∌2005 Las Vegas Nevada

Design Update

- Design Status
- Design Products Alignment
- Path Forward





Design Status

- NRC's October 8, 2004, letter identified design information needs, which we are addressing
- DOE/BSC reviews during the summer and fall of 2004 identified potential surface facility enhancements, based upon the design at that time
- DOE has defined the work scope for 11 design enhancements and schedules have been developed for those enhancements
 - Most design activities will be completed this May
 - Activities are on schedule to support our review this summer





Bases and Objectives for Enhancements

- Continue development of the design for the operations approach (e.g., fuel in air)
- Increase conservatism in Preclosure Safety
 Analysis (PCSA) (e.g., use of bounding versus
 mean values in Category 1 event sequence
 analyses)
- Enhance the design solution (e.g., addition of fire suppression system)
- Improve the documentation of how the design satisfies the design bases (e.g., reliability values)





Examples of Enhancement and Design Development Areas

- Expand the design details for the site specific aging system
- Define system boundaries for the important to safety (ITS) electrical system design
- Advance the design of non-standard equipment to confirm Preclosure Safety Analysis reliability analyses
- Evaluate potential effects of Non-ITS structures, systems, and components (SSCs) on Important to Waste Isolation (ITWI) SSCs
- Issue aircraft hazard analysis
- Issue seismic design methodology and preliminary facility seismic analysis
- Enhance the thermal management strategy
- Develop automated event trees analysis
- Include direct radiation sources and low-level waste sources in preclosure safety analyses





Aging System

- Existing dry storage system design(s) already certified under 10 CFR 72
 - Evaluate existing storage system designs against YMP site specific criteria (with vendor support)
 - Determine extent of existing vendor Safety Analysis Report (SAR) analyses that are "bounding" for Geologic Repository Operations Area (GROA) conditions
 - Perform YMP-specific analyses where warranted (e.g., seismic)
- Site-specific cask/canister system
 - Canister designed for direct emplacement after aging
 - Conceptual design based on existing waste package design configurations (Navy long waste package with pressurized water reactor (PWR) and boiling water reactor (BWR) waste package inner basket designs)
- Design supported by the suite of calculations and analyses described in NUREG-1567 and NUREG-1536





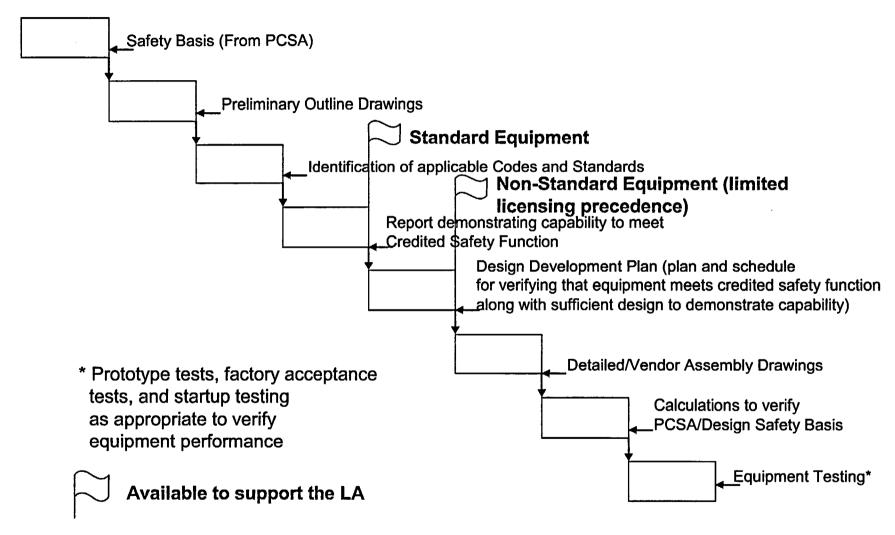
Electrical System

- Portions of the electrical system will be ITS
- The grid reliability is modeled as part of the electrical system fault tree
- Loss of grid power concurrent with a Category 1 event is classified as a Category 2 event sequence
- Diesel generators provide defense-in-depth, but do not provide an ITS function
- Grid reliability will be monitored





Equipment Design Development







Potential Effects of Non-ITS SSCs on ITWI SSCs

- DOE is evaluating the potential effects of both ITS and non-ITS SSCs on postclosure performance
 - Performed and issued analyses on the impact that the loss of emplacement drift ventilation has on the performance of the SSCs credited with ITWI
 - The analysis considered
 - » Complete loss of ventilation
 - » Passive ventilation maintained through a thermal gradient
 - » Temperature limits for the drift wall, waste package surface, and cladding
 - Results of analyses indicate
 - » Cladding temperature limit was reached after approximately 5 months with complete loss of ventilation
 - » Passive ventilation is sufficient to ensure that cladding temperature limits were not exceeded
 - Waste Packages are robust and can withstand the effect of rock fall without exceeding performance objectives, therefore ground control has not been credited with an ITS function





Aircraft Hazards

- Aircraft hazard analyses scheduled to be issued this month
- Developing overflight restriction Memorandum Of Understanding (MOU)
- Current approach credits robustness of the nuclear facilities and engineered barrier surrounding aging pads to withstand aircraft crash
- Based on the reduction of the target area the probability of an aircraft crash is a beyond Category 2 event sequence





Seismic Design Methodology

- Preclosure seismic methodology has been completed
 - Contained in project report titled "Preclosure Seismic Design Methodology for a Geologic Repository at Yucca Mountain"
- The structural analysis and design of ITS surface nuclear facilities for seismic ground motions is prepared using a two-tier analytical approach
 - The completed Tier 1 analytical approach, used multiple lumped mass stick models with soil springs of the ITS surface facilities
 - The Tier 2 seismic analysis will use three dimensional, finite element models of the ITS surface facilities





Seismic Design Methodology

(Continued)

- As a result of the PCSA, SSCs that are credited with preventing or mitigating a seismically initiated event sequence are designed to withstand one of two levels of design basis ground motions (DBGM-1 or DBGM-2) to ensure that consequences do not exceed performance objectives
 - DBGM-1 and DBGM-2 are defined as site-specific ground motions having a 1,000 or 2,000 year mean annual return period, respectively
- Analyses will be prepared to demonstrate that ITS SSCs that are designed to DBGM-2 maintain credited safety functions when subjected to beyond design basis ground motions (BDBGM) having a mean annual return period of 10,000 years
- Additionally, seismic margin analyses using high confidence, low probability of failure (HCLPF) methods will be used to demonstrate adequate seismic capacity margins exist for ITS SSCs. These margins will be used as input to the PCSA where compliance demonstration to 10CFR63 performance objectives for seismically initiated event sequences are prepared.





Thermal Management Strategy

- Develop waste package and drift loading plans
 - Plans will need to address key parameters (e.g., thermal, shielding, condition of fuel, and criticality)
 - Forms the bases for developing future technical specifications for waste package loading
 - Demonstrate technical flexibility and sensitivity in computer calculations and thermal models (e.g., subsurface thermal performance with waste package and drift loading operational approach)



Automated Event Trees

- Automated event tree analysis using conventional code System Analysis Programs for Hands-on Integrated Reliability Evaluations (SAPHIRE)
 - Supports design evolution and alternative or "trade-off" decisions – more rapid quantification of differences in risk between options for detailed design solutions
 - Enables quantification of uncertainty and better identification of importance factors as level of design detail increases
 - Enables use of best-estimates for waste throughput, number of lifting and handling operations, etc., with capability to perform sensitivity analyses on key factors
 - Accommodates incorporation of more detailed analyses for human error as level of design details increases





Direct Radiation Sources and Low-level Waste Sources

- Include potential inadvertent direct exposure of workers to sources due to failure of safety interlocks
- Update source terms and dose consequence calculations to include sources other than spent nuclear fuel and high-level radioactive waste
 - Low-Level waste collection area
 - Facility drain system sumps and retention tanks





Design Products Alignment

- Content alignment issues between design and PCSA products
 - Driven by the need to incorporate mitigation as well as prevention features
 - Improved understanding of facility event sequences resulted in a re-classification of portions of the heating, ventilation, and air-conditioning (HVAC) and electrical systems as ITS
 - Driven by an improved understanding of ITS determination methodology





Design Products Alignment (Continued)

- Transparency issues with design products
 - Issues related to clarity of bases for assumptions
- Technical adequacy was not challenged
- What did we learn
 - Improve documentation for selecting the design methodology and analysis inputs



Conclusion and Path Forward

- Significant technical progress over the past year
- Project focus
 - License Application readiness
 - Support to NRC information needs
- Path forward specific areas ready for technical interactions
 - Material handling
 - Building designs
 - HVAC systems



